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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/404,597	RAUSER ET AL.	
	Examiner	Art Unit	
	Luke S. Wassum	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6-10,12,16-18,21-26,28-34,36 and 39-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-10,12,16-18,21-26,28-34,36 and 39-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8 August 2007 has been entered.

Response to Amendment

2. The Applicants' amendment, filed 8 August 2007, has been received, entered into the record, and considered.

3. As a result of the amendment, claims 1, 16, 18, 29 and 36 have been amended, claim 35 has been canceled, and new claims 39-43 have been added. Claims 1-3, 6-10, 12, 16-18, 21-26, 28-34, 36 and 39-43 are now pending in the application.

The Invention

4. The instant application discloses a method and apparatus for providing recommendations to a user, whereby in addition to information indicative of the user's interests, additional filtering criteria is applied in order to prevent the recommendation of items that, while strictly meeting the interest criteria of the user, are not appropriate for recommendation. Examples of reasons for such items being inappropriate are, for instance, items that are out of stock or otherwise currently unavailable; items which are out of season; or items which the age or other characteristics of the user renders inappropriate.

This is done through the use of constraint filters which are associated with a first set of attributes, and wherein said constraint filters are applied to those recommendation requests having the associated first set of attributes.

Information Disclosure Statement

5. In reviewing the prosecution record for the instant application, the examiner has found that the form PTO-1449 filed with the Applicants' Information Disclosure Statement on 19 December 2005 was not properly initialed by the examiner.

Specifically, those references on page 3 which were considered by the examiner were not initialed.

This Office action includes a copy of the completed form PTO-1449.

Claim Rejections - 35 USC § 112

6. In view of the Applicants' amendments to claims 1, 16, 18, 29 and 36, the pending claim rejections under 35 U.S.C. § 112, first paragraphs have been withdrawn.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 43 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 43 recites the limitation "the recommendation means" in the preamble. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not

commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 1, 2, 6-9, 12, 29, 30, 33, 39, 40, 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aggarwal et al.** (U.S. Patent 6,487,539) in view of **Spiegel et al.** (U.S. Patent 6,629,079).

14. Regarding claim 1, **Aggarwal et al.** teaches a computer-implemented method for providing a recommendation list from a plurality of items substantially as claimed, comprising the steps of:

a) receiving a constraint to apply during searches performed in response to recommendation requests (see disclosure of 'certain rules corresponding to pre-specified domain knowledge', col. 4, lines 27-29 et seq.) and wherein the constraint includes at least one variable that includes a plurality of values (see disclosure of variables includes a plurality of associated values, col. 7, lines 9 and 24-30);

b) receiving a recommendation request including a constraint (see col. 4, lines 22-23; see also col. 6, lines 50-52 et seq.);

c) performing a search of the plurality of items in response to the received recommendation request, wherein performing the search comprises:

i) selecting the ones of the plurality of items that satisfy the constraint for the recommendation request (see col. 3, lines 26-35; see also col. 4, lines 27-29 et seq.);

ii) computing a predicted value based on a recommendation filter, for each of the selected ones of the items (see col. 3, lines 26-35; see also col. 4, lines 23-26 et seq.); and

iii) appending the selected ones of the items meeting predetermined criteria to generate the recommendation list (see col. 3, lines 26-35; see also col. 4, lines 29-30 et seq.); and

f) transmitting the generated list to the user for presentation on a device (see disclosure that the recommendations are provided to the customer, col. 3, lines 33-35).

Aggarwal et al. does not explicitly teach a method wherein the adaptable constraint includes a plurality of free variables defined by a user, receiving values for at

least one of the plurality of free variables in the adaptable constraint, binding the received values to the corresponding free variable to update the adaptable constraint for future recommendation requests.

Spiegel et al., however, teaches a method for providing a recommendation list wherein the adaptable constraint includes a plurality of free variables defined by a user, receiving values for at least one of the plurality of free variables in the adaptable constraint, binding the received values to the corresponding free variable to update the adaptable constraint for future recommendation requests (see disclosure of a system for limiting the scope of a search in an electronic commerce context [ECC] wherein a user may choose a constraint to be applied, such as [in the example of video tapes] a rating, and values to be applied to the constraint, such as 'G', col. 9, line 29 through col. 10, line 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate free variables into the constraint filters, since this would allow users to specify a specific value for an attribute at run-time, thus rendering the constraint filter more flexible than otherwise would be possible, the alternative being constructing a constraint filter for each possible value of an attribute.

15. Regarding claim 29, **Aggarwal et al.** teaches a computer-implemented method of generating recommendation lists from a plurality of items having assigned category memberships representing attributes of the items substantially as claimed, comprising:

a) receiving a plurality of recommendation requests (see col. 4, lines 22-23 et seq.);

b) applying, during a search of the plurality of items performed for each recommendation request, a series of filters to each of the items, the series comprising a constraint filter and a recommendation filter for furnishing a predicted rating value, wherein the constraint filter is selected based on attributes associated with the recommendation request and at least one variable of the constraint filter includes a plurality of values (see disclosure of 'certain rules corresponding to pre-specified domain knowledge', analogous to the claimed constraint filter, col. 4, lines 27-29 et seq.; see also disclosure of recommendation requests, col. 4, lines 22-23 et seq.; see also disclosure of multi-attribute compatibility rules, see col. 7, lines 15-33; see disclosure of variables includes a plurality of associated values, col. 7, lines 9 and 24-30);

c) generating, for each recommendation request, a recommendation list based on the predicted rating value for the item that passes the constraint filter and the recommendation filter (see col. 3, lines 26-35; see also col. 4, lines 29-30 et seq.); and

d) for each recommendation request, transmitting the generated list to the user for presentation on a device (see disclosure that the recommendations are provided to the customer, col. 3, lines 33-35).

Aggarwal et al. does not explicitly teach a method wherein the adaptable constraint includes a plurality of free variables defined by a user, receiving values for at least one of the plurality of free variables in the adaptable constraint, binding the received values to the corresponding free variable to update the adaptable constraint for future recommendation requests.

Spiegel et al., however, teaches a method for providing a recommendation list wherein the constraint filter applies a constraint to the parameters of the search, the constraint having a plurality of free variables, receiving values for at least one of the plurality of free variables in the adaptable constraint, binding the received values to the corresponding free variable to update the adaptable constraint for future

recommendation requests (see disclosure of a system for limiting the scope of a search in an electronic commerce context [ECC] wherein a user may choose a constraint to be applied, such as [in the example of video tapes] a rating, and values to be applied to the constraint, such as 'G', col. 9, line 29 through col. 10, line 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate free variables into the constraint filters, since this would allow users to specify a specific value for an attribute at run-time, thus rendering the constraint filter more flexible than otherwise would be possible, the alternative being constructing a constraint filter for each possible value of an attribute.

16. Regarding claim 42, **Aggarwal et al.** teaches a computer program product comprising a computer usable medium including control logic stored therein, the control logic enabling the generation of a recommendation list, by a method comprising:

a) receiving a constraint to apply during searches performed in response to recommendation requests (see disclosure of 'certain rules corresponding to pre-specified domain knowledge', col. 4, lines 27-29 et seq.) and wherein

the constraint includes at least one variable that includes a plurality of values (see disclosure of variables includes a plurality of associated values, col. 7, lines 9 and 24-30);

b) receiving a recommendation request including a constraint (see col. 4, lines 22-23; see also col. 6, lines 50-52 et seq.); and

c) searching the plurality of items in response to the received recommendation request (see col. 3, lines 26-35; see also col. 4, lines 27-29 et seq.).

Aggarwal et al. does not explicitly teach a computer program product wherein the recommendation request includes an adaptable constraint which includes a plurality of free variables, values are received for each of the plurality of free variables in the adaptable constraint, and the received values are bound to the corresponding free variables to update the adaptable constraint for future recommendation requests.

Spiegel et al., however, teaches a computer program product the recommendation request includes an adaptable constraint which includes a plurality of free variables, values are received for each of the plurality of free variables in the adaptable constraint, and the received values are bound to the corresponding free variables to update the adaptable constraint for future recommendation requests (see

disclosure of a system for limiting the scope of a search in an electronic commerce context [ECC] wherein a user may choose a constraint to be applied, such as [in the example of video tapes] a rating, and values to be applied to the constraint, such as 'G', col. 9, line 29 through col. 10, line 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate free variables into the constraint filters, since this would allow users to specify a specific value for an attribute at run-time, thus rendering the constraint filter more flexible than otherwise would be possible, the alternative being constructing a constraint filter for each possible value of an attribute.

17. Regarding claim 2, **Aggarwal et al.** additionally teaches a method wherein appending selected ones of the items further includes appending the selected ones of the items to the recommendation list when the predicted value exceeds a predetermined number (see col. 9, lines 44-47).

18. Regarding claim 6, **Aggarwal et al.** additionally teaches a method wherein selecting the ones of the items that satisfy the constraint filter further includes applying

a constraint containing a Boolean expression (see disclosure of the format of domain specific rules, col. 6, line 65 through col. 7, line 36).

19. Regarding claim 7, **Aggarwal et al.** additionally teaches a method wherein selecting the ones of the items that satisfy the constraint filter further includes applying a constraint containing an equality expression (see disclosure of the format of domain specific rules, col. 6, line 65 through col. 7, line 36).

20. Regarding claim 8, **Aggarwal et al.** additionally teaches a method wherein selecting the ones of the items that satisfy the constraint filter further includes applying a constraint containing a category membership expression (see disclosure of the format of domain specific rules, including categories of clothing such as shirt and pant, col. 6, line 65 through col. 7, line 36).

21. Regarding claim 9, **Aggarwal et al.** additionally teaches a method wherein computing the predicted value further includes evaluating the selected ones of the items with collaborative filtering (see col. 3, lines 16-21).

22. Regarding claim 12, **Aggarwal et al.** additionally teaches a method wherein specifying the adaptable constraint filter further includes obtaining a constraint and storing the constraint in memory (this limitation rendered inherent by the disclosure of 'certain rules corresponding to pre-specified domain knowledge', analogous to the claimed constraint filter, col. 4, lines 27-29 et seq.).

23. Regarding claim 30, **Aggarwal et al.** additionally teaches a method further comprising building a constraint using constraint forming rules and incorporating the constraint into the constraint filter (this limitation rendered inherent by the disclosure of 'certain rules corresponding to pre-specified domain knowledge', analogous to the claimed constraint filter, col. 4, lines 27-29 et seq.).

24. Regarding claim 33, **Aggarwal et al.** additionally teaches a method wherein the recommendation generating step comprises generating a list of recommendations based on predicted rating values of the items that pass the constraint filter and the recommendation filter being in excess of a specified rating value (see col. 9, lines 44-47).

25. Regarding claim 39, **Spiegel et al.** additionally teaches a method wherein a free variable in the plurality of free variables of the adaptable constraint includes a set of

possible values to be selected by the user (see disclosure of the inclusion of, for instance, a movie rating into a constraint filter, col. 9, lines 29-48).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate free variables into the constraint filters, since this would allow users to specify a specific value for an attribute at run-time, thus rendering the constraint filter more flexible than otherwise would be possible, the alternative being constructing a constraint filter for each possible value of an attribute.

26. Regarding claim 40, **Aggarwal et al.** additionally teaches a method further comprising building a constraint to apply to recommendation requests using constraint forming rules (this limitation rendered inherent by the disclosure of 'certain rules corresponding to pre-specified domain knowledge', analogous to the claimed constraint filter, col. 4, lines 27-29 et seq.), while **Spiegel et al.** teaches constraint which include a plurality of free variables (see disclosure of the inclusion of, for instance, a movie rating into a constraint filter, col. 9, lines 29-48).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate free variables into the constraint filters, since this would allow

users to specify a specific value for an attribute at run-time, thus rendering the constraint filter more flexible than otherwise would be possible, the alternative being constructing a constraint filter for each possible value of an attribute.

27. Regarding claim 43, **Aggarwal et al.** additionally teaches a computer program product wherein the recommendation means further comprises:

a) selecting the ones of the plurality of items that satisfy the constraint for the recommendation request (see col. 3, lines 26-35; see also col. 4, lines 27-29 et seq.);

b) computing a predicted value based on a recommendation filter, for each of the selected ones of the items (see col. 3, lines 26-35; see also col. 4, lines 23-26 et seq.); and

c) appending the selected ones of the items meeting predetermined criteria to generate the recommendation list (see col. 3, lines 26-35; see also col. 4, lines 29-30 et seq.).

28. Claims 16-18, 21-24, 26, 28, 36 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aggarwal et al.** (U.S. Patent 6,487,539) in view of **Spiegel et al.** (U.S. Patent 6,629,079) in view of **Valentin et al.** (Canadian Patent 2,249,096).

29. Regarding claim 16, **Aggarwal et al.** teaches an apparatus for providing a recommendation list from a plurality of items in a data processing system substantially as claimed, comprising:

a) a processing component configured to process instructions for selecting items from a plurality of items, wherein the processing component includes:

i) a constraint filter including at least one constraint having a plurality of variables (see disclosure of 'certain rules corresponding to pre-specified domain knowledge', col. 4, lines 27-29 et seq.; see also disclosure of multi-attribute compatibility rules, see col. 7, lines 15-33; see also disclosure of variables includes a plurality of associated values, col. 7, lines 9 and 24-30);

ii) a recommendation filter (see col. 4, lines 22-23 et seq.);

b) an input component configured to receive a recommendation request identifying at least one of the variables in the adaptable constraint (see col. 4, lines 22-23 ; see also col. 6, lines 50-52 et seq.);

c) a recommender component configured to perform a search in response to a received recommendation request wherein a set of search parameters is defined by the constraint and to generate a recommendation list based on the constraint filter and the recommendation filter (see col. 3, lines 26-35; see also col. 4, lines 23-30 et seq.); and

d) an output component configured to transmit the generated list for presentation on a device (see disclosure that the recommendations are provided to the customer, col. 3, lines 33-35).

Aggarwal et al. does not explicitly teach an apparatus wherein the adaptable constraint includes a plurality of free variables defined by a user, receiving values for at least one of the plurality of free variables in the adaptable constraint, binding the received values to the corresponding free variable to update the adaptable constraint for future recommendation requests.

Spiegel et al., however, teaches an apparatus for providing a recommendation list wherein the adaptable constraint includes a plurality of free variables defined by a user, receiving values for at least one of the plurality of free variables in the adaptable constraint, binding the received values to the corresponding free variable to update the adaptable constraint for future recommendation requests (see disclosure of a system for limiting the scope of a search in an electronic commerce context [ECC] wherein a user may choose a constraint to be applied, such as [in the example of video tapes] a rating, and values to be applied to the constraint, such as 'G', col. 9, line 29 through col. 10, line 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate free variables into the constraint filters, since this would allow users to specify a specific value for an attribute at run-time, thus rendering the constraint filter more flexible than otherwise would be possible, the alternative being constructing a constraint filter for each possible value of an attribute.

Neither **Aggarwal et al.** nor **Spiegel et al.** explicitly teaches an apparatus for providing a recommendation list wherein an order is determined for the constraint

filter applying step and the recommendation filter applying step based on the cost of the filters.

Valentin et al., however, teaches an apparatus comprising the step of determining an order for applying two different filters based on the cost of the filters (see extensive discussion of the selection of the optimum query execution plan, page 2, line 13 through page 4, line 16, and particularly the recitation that different retrieval operations can be performed in different orders, page 3, lines 10-11 and page 4, lines 6-9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to choose an access plan to optimize the query execution, since it is important to select a method for finding the data requested in a query which minimizes the computer and disk access time, and therefore optimizes the cost of performing the query (see page 2, lines 3-12).

30. Regarding claim 36, **Aggarwal et al.** teaches a method of generating a recommendation list from a plurality of items having assigned category memberships representing attributes of the items substantially as claimed, comprising:

a) building a constraint using constraint forming rules wherein the constraint includes a plurality of variables (see disclosure of 'certain rules corresponding to pre-specified domain knowledge', col. 4, lines 27-29 et seq.; see also disclosure of multi-attribute compatibility rules, see col. 7, lines 15-33);

b) receiving a recommendation request (see col. 4, lines 22-23 et seq.);

c) applying a series of filters to each of the plurality of items in response to the recommendation request, the series comprising the recommendation filter and the constraint filter (see col. 3, lines 26-35; see also col. 4, lines 23-30 et seq.); and

d) generating a list of recommendations based on the predicted values for the items that pass the constraint filter and the recommendation filter (see col. 3, lines 26-35; see also col. 4, lines 23-30 et seq.); and

e) transmitting the generated list to the user for presentation on a device (see disclosure that the recommendations are provided to the customer, col. 3, lines 33-35).

Aggarwal et al. does not explicitly teach a method wherein the adaptable constraint includes a plurality of free variables defined by a user, receiving values for at least one of the plurality of free variables in the adaptable constraint, binding the received values to the corresponding free variable to update the adaptable constraint for future recommendation requests.

Spiegel et al., however, teaches a method for providing a recommendation list wherein the adaptable constraint includes a plurality of free variables defined by a user, receiving values for at least one of the plurality of free variables in the adaptable constraint, binding the received values to the corresponding free variable to update the adaptable constraint for future recommendation requests (see disclosure of a system for limiting the scope of a search in an electronic commerce context [ECC] wherein a user may choose a constraint to be applied, such as [in the example of video tapes] a rating, and values to be applied to the constraint, such as 'G', col. 9, line 29 through col. 10, line 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate free variables into the constraint filters, since this would allow

users to specify a specific value for an attribute at run-time, thus rendering the constraint filter more flexible than otherwise would be possible, the alternative being constructing a constraint filter for each possible value of an attribute.

Neither **Aggarwal et al.** nor **Spiegel et al.** explicitly teaches a method for providing a recommendation list comprising the step of determining an order for the constraint filter applying step and the recommendation filter applying step based on the cost of the filters.

Valentin et al., however, teaches a method comprising the step of determining an order for applying two different filters based on the cost of the filters (see extensive discussion of the selection of the optimum query execution plan, page 2, line 13 through page 4, line 16, and particularly the recitation that different retrieval operations can be performed in different orders, page 3, lines 10-11 and page 4, lines 6-9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to choose an access plan to optimize the query execution, since it is important to select a method for finding the data requested in a query which minimizes the

computer and disk access time, and therefore optimizes the cost of performing the query (see page 2, lines 3-12).

31. Regarding claim 17, **Aggarwal et al.** additionally teaches an apparatus wherein appending selected ones of the items further includes appending the selected ones of the items to the recommendation list when the predicted value exceeds a predetermined number (see col. 9, lines 44-47).

32. Regarding claim 18, **Aggarwal et al.** and **Spiegel et al.** teaches an apparatus for providing a recommendation list substantially as claimed.

Neither **Aggarwal et al.** nor **Spiegel et al.** explicitly teaches an apparatus for providing a recommendation list comprising the step of determining an order of the filters to apply to the plurality of items based on the cost of the filters, wherein the constraint filter is applied first when the cost is lower, and applying the recommendation filter first when the cost is lower.

Valentin et al., however, teaches an apparatus for providing a recommendation list comprising the step of determining an order of the filters to apply to the plurality of items based on the cost of the filters, wherein the constraint filter is applied first when the cost is lower, and applying the recommendation filter first when the cost is lower (see extensive discussion of the selection of the optimum query execution plan, page 2, line 13 through page 4, line 16, and particularly the recitation that different retrieval operations can be performed in different orders, page 3, lines 10-11 and page 4, lines 6-9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to choose an access plan to optimize the query execution, since it is important to select a method for finding the data requested in a query which minimizes the computer and disk access time, and therefore optimizes the cost of performing the query (see page 2, lines 3-12).

33. Regarding claim 21, **Aggarwal et al.** additionally teaches an apparatus wherein selecting the ones of the items that satisfy the constraint filter further includes applying the at least one constraint containing a Boolean expression (see disclosure of the format of domain specific rules, col. 6, line 65 through col. 7, line 36).

34. Regarding claim 22, **Aggarwal et al.** additionally teaches an apparatus wherein selecting the ones of the items that satisfy the constraint filter further includes applying the at least one constraint containing a category membership expression (see disclosure of the format of domain specific rules, including categories of clothing such as shirt and pant, col. 6, line 65 through col. 7, line 36).

35. Regarding claim 23, **Aggarwal et al.** additionally teaches an apparatus wherein selecting the ones of the items that satisfy the constraint filter further includes applying the at least one constraint containing an equality expression (see disclosure of the format of domain specific rules, col. 6, line 65 through col. 7, line 36).

36. Regarding claim 24, **Aggarwal et al.** additionally teaches an apparatus wherein computing the predicted value further includes evaluating the selected ones of the items with collaborative filtering (see col. 3, lines 16-21).

37. Regarding claims 26 and 28, **Aggarwal et al.** additionally teaches an apparatus wherein specifying the adaptable constraint filter using a set of constraint-forming rules further includes obtaining a constraint from a user and storing the constraint in

memory (this limitation rendered inherent by the disclosure of 'certain rules corresponding to pre-specified domain knowledge', analogous to the claimed constraint filter, col. 4, lines 27-29 et seq.).

38. Regarding claim 41, **Spiegel et al.** additionally teaches a method wherein a free variable in the plurality of free variables of the adaptable constraint includes a set of possible values to be selected by the user (see disclosure of the inclusion of, for instance, a movie rating into a constraint filter, col. 9, lines 29-48).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate free variables into the constraint filters, since this would allow users to specify a specific value for an attribute at run-time, thus rendering the constraint filter more flexible than otherwise would be possible, the alternative being constructing a constraint filter for each possible value of an attribute.

39. Claims 3, 10 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aggarwal et al.** (U.S. Patent 6,487,539) in view of **Spiegel et al.** (U.S. Patent

6,629,079) as applied to claims 1, 2, 6-9, 12, 29, 30, 33, 39, 40, 42 and 43 above, and further in view of **Breese et al.** (U.S. Patent 6,006,218).

40. Regarding claims 3, 10 and 34, **Aggarwal et al.** and **Spiegel et al.** teach a method for providing a recommendation list substantially as claimed.

Neither **Aggarwal et al.** nor **Spiegel et al.** explicitly teaches a method wherein appending selected ones of the items further includes appending a predetermined number of items to the list and truncating the list when the predetermined number of the selected ones has been met.

Breese et al., however, teaches a method wherein appending selected ones of the items further includes appending a predetermined number of items to the list and truncating the list when the predetermined number of the selected ones has been met (see col. 2, lines 46-52; see also col. 7, lines 46-51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to append a predetermined number of items to the list, since this would allow

a user to see only some specified desired number of results, such that only the most relevant results are presented.

41. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Aggarwal et al.** (U.S. Patent 6,487,539) in view of **Spiegel et al.** (U.S. Patent 6,629,079) in view of **Valentin et al.** (Canadian Patent 2,249,096) as applied to claims 16-18, 21-24, 26, 28, 36 and 41 above, and further in view of **Breese et al.** (U.S. Patent 6,006,218).

42. Regarding claim 25, **Aggarwal et al.**, **Spiegel et al.** and **Valentin et al.** teach an apparatus for providing a recommendation list from a plurality of items substantially as claimed.

None of **Aggarwal et al.**, **Spiegel et al.** nor **Valentin et al.** explicitly teaches an apparatus wherein appending selected ones of the items further includes appending a predetermined number of items to the list and truncating the list when the predetermined number of the selected ones has been met.

Breese et al., however, teaches an apparatus wherein appending selected ones of the items further includes appending a predetermined number of items to the list and truncating the list when the predetermined number of the selected ones has been met (see col. 2, lines 46-52; see also col. 7, lines 46-51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to append a predetermined number of items to the list, since this would allow a user to see only some specified desired number of results, such that only the most relevant results are presented.

43. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aggarwal et al.** (U.S. Patent 6,487,539) in view of **Spiegel et al.** (U.S. Patent 6,629,079) as applied to claims 1, 2, 6-9, 12, 29, 30, 33, 39, 40, 42 and 43 above, and further in view of **Valentin et al.** (Canadian Patent 2,249,096).

44. Regarding claims 31 and 32, **Aggarwal et al.** and **Spiegel et al.** teach a method for providing a recommendation list substantially as claimed.

Neither **Aggarwal et al.** nor **Spiegel et al.** explicitly teaches a method for providing a recommendation list comprising the step of determining an order of the filters to apply to the plurality of items based on the cost of the filters, wherein the constraint filter is applied first when the cost is lower, and applying the recommendation filter first when the cost is lower.

Valentin et al., however, teaches a method for providing a recommendation list comprising the step of determining an order of the filters to apply to the plurality of items based on the cost of the filters, wherein the constraint filter is applied first when the cost is lower, and applying the recommendation filter first when the cost is lower (see extensive discussion of the selection of the optimum query execution plan, page 2, line 13 through page 4, line 16, and particularly the recitation that different retrieval operations can be performed in different orders, page 3, lines 10-11 and page 4, lines 6-9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to choose an access plan to optimize the query execution, since it is important to select a method for finding the data requested in a query which minimizes the

computer and disk access time, and therefore optimizes the cost of performing the query (see page 2, lines 3-12).

Response to Arguments

45. Applicant's arguments filed 8 August 2007 have been fully considered but they are not persuasive.

46. Regarding the Applicants' argument that the **Breese et al.** reference fails to disclose various limitations relating to the adaptable constraint, the examiner respectfully disagrees. However, in order to more effectively advance prosecution, a new reference has been applied in the rejections of record.

47. Regarding the Applicants' argument that the **Valentin et al.** reference fails to teach the claimed ordering the execution of constraint and recommendation filters based upon the relative cost, the examiner respectfully disagrees.

The **Valentin et al.** reference discloses the practice of query optimization, a process wherein a database query is decomposed into its smallest component database

transactions, and the order in which those transactions are executed is arranged in order to minimize the amount of time required to complete the query, thus minimizing the 'cost' of the query.

The ordering of 'subqueries' in order to optimize query execution (and minimize the cost) is completely analogous, if not identical, to the ordering of 'multiple distinct queries' (using the terminology of the Applicants' arguments). Query optimization orders queries (which happen to be components of a larger database query transaction) to optimize efficiency, exactly as is claimed by the Applicants.

The Applicants also argue that the **Valentin et al.** reference fails to teach optimizing the execution order of multiple, independent filter modules having processing separate and distinct from simple data retrieval. However, the examiner points out that filtering is in fact part of the process of data retrieval, and the optimization of database queries necessarily includes the optimization of any number of distinct filters.

Conclusion

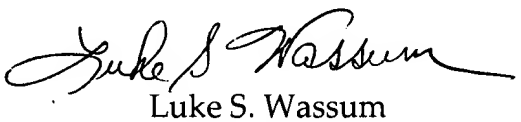
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luke S. Wassum whose telephone number is 571-272-4119. The examiner can normally be reached on Monday-Friday 8:30-5:30, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

In addition, INFORMAL or DRAFT communications may be faxed directly to the examiner at 571-273-4119. Such communications must be clearly marked as INFORMAL, DRAFT or UNOFFICIAL.

Customer Service for Tech Center 2100 can be reached during regular business hours at (571) 272-2100, or fax (571) 273-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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7 November 2007